

# SEMINARIUM Z MAGNETYZMU I NADPRZEWODNICTWA

Uprzejmie zawiadamiamy, że w **środę**

**8 listopada 2017 r., o godz.10:00**

w sali 203 (bud. 1) odbędzie się seminarium, na którym

**Dr. Ulrich Köbler**

*Forschungszentrum Juelich, Germany*

wygłosi referat na temat:

## **„Experimental studies of the boson fields in the elastic, magnetic and metallic solid”**

Experiments are discussed showing that for sufficiently low temperatures the dynamics of the elastic, magnetic and electronic degrees of freedom of solids is as for a continuous medium. Since the excitations of a continuous medium are bosons the mentioned properties are determined by boson fields. As a consequence, field theories rather than atomistic concepts (Hamiltonians) are necessary for description. Identification of boson fields is possible by heat capacity measurements. Typical for the heat capacity of a boson field is that it follows a single  $T^\epsilon$  power function that holds over a finite temperature range. In the elastic case the exponent is  $\epsilon=3$ , in the electronic case  $\epsilon=1$ . In ordered magnets a multitude of exponents could be identified ( $\epsilon=3/2, 2, 5/2, 3, 9/2$ ). This is because the boson fields in ordered magnets can assume any dimensionality and depend on whether the spin is integer or half-integer. If the dynamics is determined by a boson field all atomistic excitations (magnons, phonons) are irrelevant. As we will show, thermal decrease of the magnetic order parameter is controlled not by exchange interactions between spins but by the heat capacity of the relevant boson field.

Serdecznie zapraszamy

Roman Puźniak  
Henryk Szymczak  
Andrzej Wiśniewski